



### Putting Light to the Test



The Model 60 FiberTracker Troubleshooting Kit is used to trace, identify, and troubleshoot single-mode or multimode optical fiber system for construction and maintenance in outside plant, cable TV or premise wiring applications. The Model 60 kit consists of a receiver probe (detection wand), a Model 60-1310 or 60-1550 light source/transmitter, a battery charger, a 3-meter jumper cable with ST-ST connectors, within a rugged, sealed insulated carrying case. A Model 60/510i or 60/510g FiberTracker Deluxe Troubleshooting Kit includes all of the elements of the basic kit, plus Cercis 510i or 510g Optical Power Meter. (Refer to Cercis 510-Series OPM data sheet for complete details.)

The Model 60 FiberTracker receiver is unique in that it will detect light loss at a broken fiber or a microbend through the jacket of the most commonly used cables. This ultra-miniature troubleshooting tool detects 500 Hz, 1300 nm or 1550 nm tracer signals injected into a fiber. One AA alkaline battery powers the unit which provides both audible tone and visual (red LED) indications of tracer signal detections. The LED acts as a battery and circuit status indicator, but because the LED only operates when the units has been turned on, it also serves as a "Power On" indicator. The LED will blink approximately once per second when the tracer signal is not detected and the unit is operations. When the tracer signal is above the FiberTracker receiver's threshold, the LED will light continuously, and the audible tone will sound as long as the tracer signal is present. When the battery voltage is low, the LED will cease to blink.

The Model 60 FiberTracker light source/transmitter provides an economical means of injecting light into single-mode and multimode fibers. This unique device is specifically designed to work with the Model 60 detection wand; however, the light source/transmitter can also be used with any optical power meter to determine optical output. The Model 60 transmitter is encased in a small, highly portable plastic enclosure. This laser-based light source/transmitter offers an optical output power adjust that stabilizes the output over a 10 dB range of -3 dBm to -13 dBm (500 μW to 50 μW). Optical output may be selected for a continuous 500 Hz output or a gated (@ 1 Hz) 500 Hz output to create a distinct optical signal that can be easily identified. Power is via four rechargeable NiCd batteries that recharge in less than six hours using the battery charger (provided). The batteries typically provide over 24 hours of operation when fully charged.

### Application Drawings & Notes

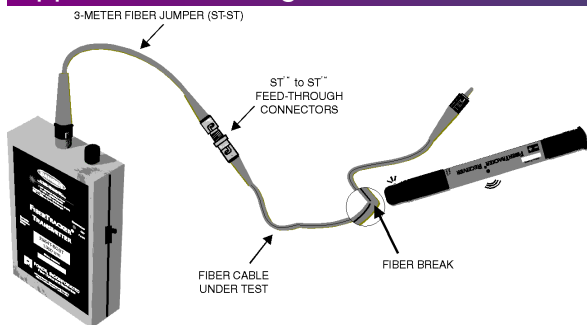


Fig. 1— Identifying fiber breaks through the cable jacket with the light source/transmitter & Detection wand/receiver.

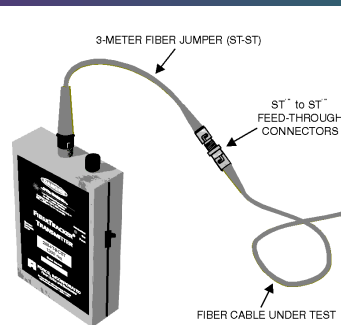


Fig. 2— Identifying fibers with the light source/transmitter & detection wand/receiver.

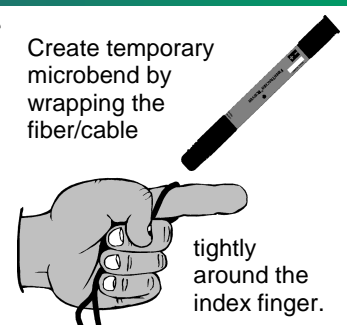


Fig. 3— Identifying microbends with the Model 60 FiberTracker.

**Pulse Mode**—The pulse mode is a useful means of providing a check when the user is uncertain of signal detections in the continuous mode (as a result of ambient light, electromagnetic or other interferences). When identifying a fiber or locating fiber breaks, switching to the pulsed mode causes the receiver to beep and the LED to blink at a rate of 1 Hz as opposed to a continuous tone, illuminated LED (in continuous mode) for the desired fiber.

**Variable Optical Power Adjustment**—The variable optical power adjustment is helpful when verifying fiber continuity or when identifying fiber breaks. When verifying continuity with an optical power meter, the light source/transmitter may be set to the required power level and the optical loss of the fiber may be determined. When identifying breaks in a fiber, set the light source/transmitter to maximum power. This allows for multiple breaks to be determined because at this level the signal is strong enough to provide a detectable signal at secondary breaks along the fiber.

Specifications subject to change without notice.

\*Typical





Specifications	Units	Min.	Typ.	Max.	Notes
<b>FiberTracker Detection Wand/Receiver @ 25C</b>					
Optical Sensitivity	dBm	-60	-63		
Detection Wavelength	nm	1270	1300	1330	1
	nm	1510	1550	1590	1
Detection Frequency	Hz	480	500	520	
Full Beam Width	°		20		
Battery Type		1 AA Alkaline Battery			2
Operating Battery Life	Hrs		200		2
Operating Temperature Range	°C	+10		+40	
Humidity (RH, non condensing)	%	10		90	
Weight (without battery)	oz		1.9		
	g		54		
Physical Dimensions	in	0.705 max. dia. X 7.575 long			
	mm	17.91 max. dia. X 192.41 long			
<b>FiberTracker Light Source/Transmitter @ 25C</b>					
Optical Output Power	dBm	-16		-3	4
Operating Wavelength—60-1310 —60-1550	nm	1270	1300	1330	1
	nm	1510	1550	1590	1
Modulation Frequency Continuous Mode Pulse Mode	Hz		500		4
	Hz		1		4
Spectral Width (FWHM)	nm	2		5	
Battery Type		Four AA NiCd Rechargeable Batteries			
Operating Battery Life	Hrs		24		
Operating Temperature Range	°C	+10		+40	
Humidity	%	10		90	
Weight (without batteries)	oz		8.5		
	g		241		
Physical Dimensions	in	3.5 X 6.1 X 1.3			
	mm	88.9 X 154.9 X 33.0			
<b>Battery Charger (for Light Source/Transmitter NiCd Batteries)</b>					
AC Input		120V AC @ 60 Hz			
DC Output Voltage (nominal)		7.5 Volts @ 300 mA			
Enclosure Output Cord		Black Plastic Black, 6 ft. Length, 20 AWG			

## SPECIFICATION NOTES

- 1) The operating wavelength of 1300 nm or 1550 nm must be specified at the time the order is placed. See data sheet for ordering information.
- 2) The Model 60 FiberTracker receiver is powered via one AA alkaline battery (provided) which offers any operating life of 200 hours typical..
- 3) Optical output on the Model 60 light source/transmitter is user-adjustable over at least a 10 dB range. The light source/transmitter also offers two types of optical output. The laser may be set to send a continuous 500 Hz tone or a gated (@ 1 Hz) 500 Hz tone. This allows the user to send a unique signal that may be more easily identified. See Fig. 2 for the location of the continuous/off/pulse switch.
- 4) The Model 60 FiberTracker light source/transmitter uses four AA NiCd rechargeable batteries (provided) and typically operates for 24 hours. The battery charger is provided and will typically recharge the batteries in six hours. The charger may be used to power the unit, or the transmitter may be powered via alkaline batteries, BUT the battery charger WILL NOT be usable in this case. All specifications given apply to NiCd batteries.



## Identifying Fibers & Fiber Breaks

### Clean & Connect

Clean the end faces of all optical connectors using alcohol-moistened lens-grade tissues or commercial cleaners such as CLETOP. Connect the fiber under test to the jumper. Connect the jumper to the optical output port on the light source.

**Caution:** Be certain that the other end of the fiber or fiber cable is suitably terminated or that an active device receptacle cap is placed on the other end of the fiber. Power should never be applied to an unterminated fiber or cable as the laser-based optical emissions from this end may cause permanent eye damage.

### Power On & Adjust

Turn on the light source via the continuous/off/pulse switch on its side. Connect the fiber under test to a power meter and using the power adjust knob at the top of the light source, achieve a stabilized optical output within the 10 dB range of -3 to -13 dBm. Output is 500 Hz (Continuous Mode) or gated at 1 Hz, 500 Hz (Pulse Mode).

### Detection Wand

Turn on the detection wand by depressing the switch at the end. The detector will beep once, and the LED at the end will blink red at one second intervals to indicate normal operation. The detection wand will only detect the 500 Hz tracer signals emitted from the Model 60 transmitter.

In the presence of interfering ambient light or electromagnetic energy or when identifying one fiber in a multi-fiber cable, switch the light source to Pulse Mode which emits a differentiated pulsed 1 Hz tone. The receiver will beep and its indicator LED will blink at the same 1 Hz rate, giving positive signal identification. When battery voltage is low, the LED will cease to blink.

### Fiber Breaks

Move the detector along the length of the optical fiber under test. When the detector detects light, the LED will light red continuously, and the detector will emit a continuous tone.



#### Fiber Identification

Bend the fiber in a radius not to exceed 5 millimeters. Move the detector along the bent region of the fiber under test. When the detector detects light, the LED will light red continuously and the detector will emit a continuous tone.

### Battery Installation & Recharging

**Light Source:** 4 rechargeable NiCd 1.5 V AA batteries are supplied. To recharge, insert the end of the battery charger cord into the side jack of the light source. Plug the other end into any 120 V outlet ; batteries require ~6 hours to recharge. Replacement NiCd batteries should be installed in the battery compartment at the back of the unit. The positive (+) and negative (-) ends must be oriented according to the diagram.

**Detector:** 1 alkaline 1.5 V AA battery installed. Replacement 1.5 V alkaline battery installed by unscrewing the rubber end cap and inserting battery with positive (+) side facing the nose cone.

\*\*Use of same size or larger fibers (*italic*) will yield the same output power since the unit contains a fiber-pigtailed source.

## Part Number      Ordering Information

60-1310-KIT	1310 nm Laser Diode Light Source
60-1550-KIT	1550 nm Laser Diode Light Source
60ST1K3ST*	ST:ST (PC) Jumper, 3 m 9/125 cable
60-DW*	1310/1550/1625 nm Detection Wand
60-RC*	Battery Recharger for Light Source

**Wavelengths:** 1310 and 1550 nm are standard wavelengths used in optical fiber systems. Both wavelengths are well matched to the attenuation profile of singlemode fibers. 1625 nm is used primarily for testing—either for continuous monitoring or simultaneous checking; this wavelength does not interfere with EDFAs and other system components.

## Class 1 Laser Output & Fiber Types

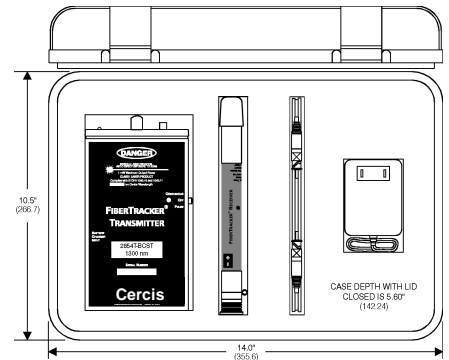
Each fault detector contains a singlemode fiber pigtailed laser, which retains power output within the prescribed limits of Class 1 laser product—while testing SM or MM fibers.

Knob	Option	Description
ON	Continuous Pulse Mode	Select output mode desired with On/ Continuous/Pulse switch
Power Adjust	Obtain and maintain max. output	<b>Turn</b> Clockwise—to decrease power Counterclockwise—to increase power

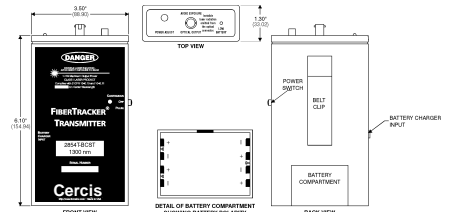
**Wavelengths:** 1310 nm for lengths  $\geq 50$  km (~ 0.3 dB/km)  
or 1550 nm  $\geq 75$  km (~ 0.2 dB/km attenuation SMF)

**Stabilized Calibrated Output 0.05 dB over 5 hrs.**

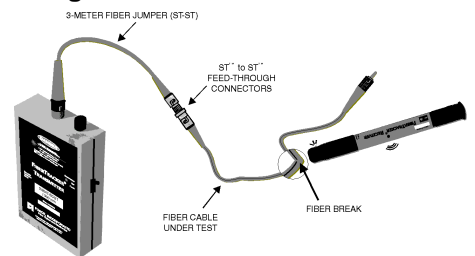
Subject to change without notice. \*Not available separately 6/01M60FF Rev. A



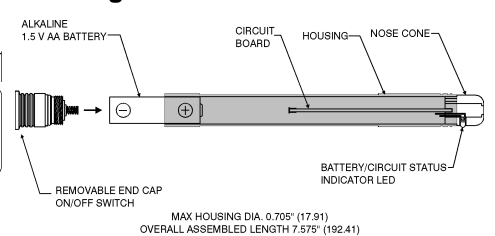
### Contents of FiberTracker Kit



### Light Source ID & Dimensions



### Light Source Fiber Break ID



### Detector ID & Dimensions

